

UC-ANL Consortium for Nanoscience Research

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Consortium Mission

- Provide a focal point for fundamental research at the intersection of biology, chemistry, materials science, and physics
- Foster cross-cutting interactions between traditionally separate disciplines
- Incubate synergistic, non-traditional approaches to nanofabrication
- Enhance the research environment at both UC and ANL through collaborative nanoscience

Nanoscale Materials Synthesis & Self-Assembly

Leaders: S.D. Bader, S.J. Sibener, L. Yu



Vision:

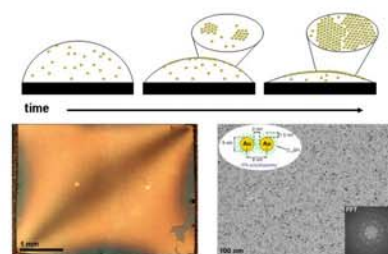
Hierarchical self-assembly of complex hybrid bio-organic-inorganic nanomaterials with arbitrary control of order at multiple length scales

S.B. Darling, N.A. Yufa, A.L. Cisse, S.D. Bader, S.J. Sibener, *Adv. Mater.* 17 (2005) 2446.

Superconducting Quantum Solids

Leaders: G.W. Crabtree, H.M. Jaeger, T.F. Rosenbaum

Highly-ordered nanoparticle monolayers by drop drying



Vision:

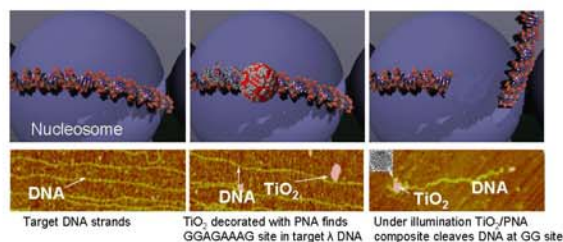
Development of new classes of hybrid materials that combine superconducting and non-superconducting nanoscale building blocks for magnetic and electronic applications

T. Bigioni, X.-M. Lin, T. Nguyen, E. Corwin, T. Witten, H. Jaeger, *Nature Materials* (2006) in press.

Bio Interface

Leaders: T. Rajh and D. Preuss

Light-activated semiconductor-based DNA scissors



Vision:

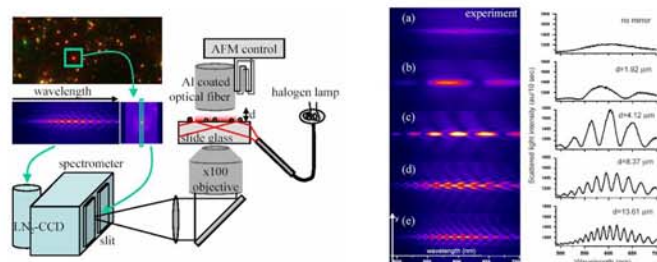
Design of artificial, robust DNA scissors with unique and rare site specificity for sequencing and gene cloning applications

J. Liu, Z. Saponjic, N.M. Dimitrijevic, S. Luo, D. Preuss, T. Rajh, *SPIE* (2006) submitted.

Nanophotonics

Leaders: G.P. Wiederrecht, N.F. Scherer, P. Guyot-Sionnest

Interferometric scattering from a single nanoparticle



Vision:

Novel non-intrusive, high resolution nanoparticle imaging with potential application to intracellular structure investigations

S.-K. Eah, N.F. Scherer, H.M. Jaeger, G.P. Wiederrecht, X.-M. Lin, *J. Phys. Chem. B* 109 (2005) 11858.